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A/S  
Docket No.: 1454.1168

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Lucian HIRSCH et al.

Serial No. 09/700,093

Group Art Unit: 2194

Confirmation No. 1415

Filed: November 10, 2000

Examiner: Li B. Zhen

For: METHOD AND COMMUNICATION SYSTEM FOR PROCESSING STATE  
INFORMATION IN A MANAGEMENT NETWORK HAVING A NUMBER OF  
MANAGEMENT LEVELS

**APPEAL BRIEF**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

**I. Real Party in Interest**

The inventors, Lucian Hirsch and Alfred Schmidbauer, assigned all rights in the subject application to SIEMENS AKTIENGESELLSCHAFT according to the Assignment executed April 14 and 15, 1999 which was submitted for recordation on November 10, 2000 and recorded at Reel 11337, Frames 307-309. Therefore, the real party in interest is SIEMENS AKTIENGESELLSCHAFT.

**II. Related Appeals and Interferences**

There are no related appeals or interferences known to Appellant, Appellant's legal representatives or the Assignee, SIEMENS AKTIENGESELLSCHAFT, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**III. Status of Claims**

Claim 1 has been cancelled, claims 2-34 are pending in the application and claims 2-34 stand rejected under 35 U.S.C. § 103(a). The rejection of claims 2-34 is being appealed.

#### **IV. Status of Amendments**

No Amendment was filed in response to the Office Action mailed October 16, 2009.

#### **V. Summary of Claimed Subject Matter**

The application is directed to "state realignment of state information in a management network having a number of management levels" as recited in the preamble of independent claim 17, for example, or simply a "communication system undergoing state realignment" as recited in claim 31. Unless stated otherwise, all references below are to the English translation of the international application which was submitted upon entering the national phase on November 10, 2000.

Claim 17 recites a communication system comprising two elements. The first element is an agent at a first management level storing state information together with managed objects associated with the first management level, the state information defining a state of network resources associated with the managed objects stored in the agent

(claim 17, lines 3-5), as described, for example, at page 1, lines 16-30 and illustrated in Fig. 3.

"[E]ach item of state information," further defined as being something "for which state realignment shall be performed, can assume at least two values" (claim 17, lines 5-7), as described, for example, in the paragraph spanning pages 3-4.

The second element recited in claim 17 is "a manager, at a second management level above the first management level" (claim 17, line 8), as described, for example, at page 1, lines 21-23) and illustrated in Fig. 3. The "manager" is recited as "sending a request message for performing state realignment to said agent" (claim 17, lines 8-9), as described, for example, at page 12, lines 22-24 and illustrated in Fig. 3. This occurs, "after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed" (claim 17, lines 9-11), as described, for example, at page 2, lines 17-20.

Operations performed by "said agent" include

checking the state information of said agent with regard to deviations from a normal state defined by one of a predefined value and a combination of predefined values, and sending only deviant state information of said agent indicating the deviations from the normal state of the state information to said manager in response to the request message

(claim 17, last 5 lines), as described, for example, at page 3, lines 13-15, as illustrated in Figs. 3 and 4.

Claim 30 is directed to a "method for state realignment of state information in a communication system by way of a management network having a number of management levels, comprising" (claim 30, lines 1-2)

storing, at an agent of a first management level together with managed objects, state information which defines a state of network resources associated with the managed objects stored in the agent, where each item of state information, for which state realignment shall be performed, can assume at least two values

(claim 30, lines 3-6), as described, for example, at page 1, lines 16-30 and in the paragraph spanning pages 3-4, with an illustration in Fig. 3. The second operation recited in claim 30 is "defining a normal state of the state information by one of a predefined value and a combination of predefined values" (claim 30, lines 7-8), as described, for example, at page 14, lines 8-17.

The third operation recited in claim 30 is

sending, to the agent from a manager at a second management level above the first management level, a request message for performing the state realignment after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed

(claim 30, lines 9-12), as described, for example, at page 12, lines 22-24 and illustrated in Fig. 3 and at page 2, lines 17-20. The fourth operation recited in claim 30 is "comparing by the agent, the state information stored by the agent for deviation from a normal state of the state information" (claim 30, lines 13-14), as described, for example, at page 3, lines 13-15. The final operation recited in claim 30 is

sending, by the agent to the manager in response to the request message, only deviant state information indicating deviation from the normal state of the state information previously stored by the agent and not sending state information which does not deviate from the normal state of the state information

(claim 30, last 4 lines), as described, for example, at page 3, lines 13-23.

Claim 31 is directed to a "communication system undergoing state realignment, comprising" (claim 31, line 1) two elements. The first element is "an agent of a first management level that stores state information which defines a state of network resources associated with managed objects stored in the agent" (claim 31, lines 2-3), as described, for example, at page 1, lines 16-30 and illustrated in Fig. 3. "[E]ach item of state information," further defined as being something "for which state realignment shall be performed, can assume at least two values" (claim 31, lines 3-5), as described, for example, in the paragraph spanning pages 3-4.

The second element recited in claim 31 is "a manager, at a second management level" (claim 17, line 8), as described, for example, at page 1, lines 21-23) and illustrated in Fig. 3. The "manager ... sends a request message for performing state realignment to the agent" (claim 31, lines 6-7), as described, for example, at page 12, lines 22-24 and illustrated in Fig. 3. This

occurs, "after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed" (claim 31, lines 7-8), as described, for example, at page 2, lines 17-20. The agent then

compares the state information stored by the agent for deviation from a normal state, defined by one of a predefined value and a combination of predefined values, and sends deviant state information of the agent indicating the deviations from the normal state of the state information to the manager only in response to the request

(claim 31, last 4 lines), as described, for example, at page 3, lines 13-15, as illustrated in Figs. 3 and 4.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

In the October 16, 2009 Office Action, claims 17, 30 and 31-33 were rejected under 35 USC § 103(a) as unpatentable over U.S. Patent 5,903,568 to Tanaka et al. in view of Published PCT Application 96/20547 by Carretta et al. and claims 2-16, 18-29 and 34 were rejected under 35 USC § 103(a) as unpatentable over the combination of Tanaka et al. in view of Carretta et al. and further in view of U.S. Patent 6,404,743 to Meandzija. At issue is whether the combination of Tanaka et al. in view of Carretta et al., with or without Meandzija, teaches or suggests all of the limitations recited in claims 2-34.

## **VII. Argument**

### **Rejections under 35 USC § 103(a)**

In items 6-8 on pages 3-8 of the October 16, 2009 Office Action, claims 17, 30 and 31-33 were rejected under 35 USC § 103(a) as unpatentable over Tanaka et al. in view of Carretta et al. It is submitted that the primary reference is not relevant to the claimed subject matter and what was cited therein does not teach or suggest the limitations that are allegedly taught by this reference. As a result, there are omissions of one or more essential elements needed for a *prima facie* rejection. Furthermore, it is submitted that the combinations of references is improper due to the lack of relevance of the primary reference.

As discussed in the Amendments filed April 13, 2009 and July 13, 2009 and set forth in Section V above, the claims are directed to a "communication system for state realignment" (claim 17, line 1, see also lines 6 and 9); a "method for state realignment" (claim 30, line 1, see also lines 5 and 10); and a "communication system undergoing state realignment" (claim 31, line 1, see also lines 4 and 7). Despite the attempt to educate the Examiner on the meaning of the words "state realignment" in the art during the Interview on July 7, 2009, the October 16, 2009

Office Action continued to rely on U.S. Patent 5,903,568 to Tanaka et al. as the primary reference, even though neither of the words "state" and "realignment" appear therein. It is submitted that no valid *prima facie* obviousness rejection of the subject claims could use Tanaka et al. as a primary reference when it has so little relevance to the subject matter of all of the independent claims.

The October 16, 2009 Office Action began the rejection of all of the independent claims by asserting that with regard to claim 17, Tanaka et al. "teaches a communication system for processing state information" even though (1) the term "state information" is not used in Tanaka et al. and (2) claim 17 is directed to a "communication system for state realignment of state information" not merely to "processing state information" as described in the Office Action.

On page 3 at lines 13-16, the October 16, 2009 Office Action asserted that the phrase "performing state realignment to the agent" is taught by the following in Tanaka et al.:

a lower-layer manager 106 for performing a service function in response to a request from the upper-layer manager 101, a plurality of lower-layer agents 107 for performing a service function in response to a request from the lower-layer manager 106; col. 6, lines 22 - 50 and col. 7, lines 3 -11.

However, this description of a "service function" is not equivalent to "state realignment" as known in the art. As discussed at the Interview on July 7, 2009, "state realignment" is required if states are stored in parallel in different locations, such as a manager and an agent in different management layers of a management network and are deemed for some reason to be no longer synchronized with each other.<sup>1</sup> All the independent claims recite examples of when state realignment is necessary, "after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed" (claim 17, lines 9-11; claim 30, lines 10-12; and claim 31, lines 7-8). In large systems with many states stored in parallel in more than one location, the specific problem arises that state realignment may imply the exchange of a large amount of data, because usually all states need to be realigned. In this situation, "state realignment" can last a long time which significantly affects the performance of the management system (see page 2, lines 24-30 of the English translation of the application).

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<sup>1</sup> For articles discussing "state realignment" as that term is used in the claims, see, J.A., Rossiter, "Stable prediction for unstable independent models," IEEE Transactions on Automatic Control, Vol. 48, No. 11, Nov. 2003, pp. 2029 - 2035; Jyh-Charn Liu et al., "Efficient implementation techniques for gracefully degradable multiprocessor systems," IEEE Transactions on Computers, Vol. 44, No. 4, April 1995, pp. 503-517; William J. Gerber et al., "Real-Time Synchronization and Modification of a Behavioral Vehicle Model for Distributed Simulation," The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Vol. 1999; Alexander Treiber et al., "A fully automated entanglement-based quantum cryptography system for telecom fiber networks," New Journal of Physics, Vol. 11, April 2009, pp. 45013-45031.

The October 16, 2009 Office Action next asserted that the limitation "deviation(s) from a normal state" (claim 17, line 12; claim 30, lines 13-14; claim 31, line 11) is taught by the description in Tanaka et al. that "lower-layer agent 107 gives an event notification  $N_{[n-1]}$  1 produced in the managed object  $M_{[n-1]}$  1 to the lower-layer manager 106 in a step 401, col. 10, lines 45 - 48" (Office Action, page 3, lines 18-19). First, it is submitted that the October 16, 2009 Office Action has taken the teachings at column 10, lines 45-48 of Tanaka et al. out of context. Whatever occurs during "event notification" is irrelevant to both the claims and the "service function" that the lower-level manager 106 performs "in response to a request from the upper-layer manager 101" (Office Action, page 3, line 14), because the "event notification" does not appear to be performed "in response to a request" from anything. Rather, event notifications appear to be operations of the system disclosed by Tanaka et al. that are completely separate from responding to a request. Many examples can be cited indicating that "event notifications" are not performed in response to a request, including claim 1 of Tanaka et al., "managed-object correspondence information convert means ... for receiving operations, responses, and event notifications from the managed objects of the upper and lower layers;" the separate sentences at the end of the first paragraph - column 1, lines 14-18 - of the Description of the Related Art; and the description of Fig. 8, which contains block 401 that was cited in the Office Action as teaching "deviation(s) from a normal state" and is not described as related to Fig. 7, "a flowchart of an operation response processing sequence" (column 6, lines 12-13).

Second, even if the teachings of Tanaka et al. regarding "event notification" were relevant to detecting "deviation(s) from a normal state" as part of "state realignment," the assertions on page 3, lines 17-19 of the October 16, 2009 Office Action overlook the fact that during state realignment an alarm state of a managed object would be transmitted if the value of the alarm state is "NO ALARM" and thus, reflects no deviation from its "normal state." Thus, it is submitted that the alarm forwarding illustrated in Fig. 8 of Tanaka et al. is not a technology which is suitable to reduce the amount of data needed to be exchanged for the purpose of state realignment. Rather the opposite is the case because for alarm management every state change usually needs to be exchanged in a timely fashion between two management systems to allow for fast alarm clearance. Thus, Tanaka et al. teaches diametrically the opposite of the claimed invention which, as discussed above, seeks to avoid as many exchanges of data as possible.

To avoid the drawbacks of the conventional "state realignment" process described above and in the Background of the Invention section of the application, the invention as claimed in claim 17, for example, includes "checking the state information ... with regard to deviations from

a normal state defined by one of a predefined value and a combination of predefined values, and sending only deviant state information ... indicating the deviations from the normal state of the state information" (claim 17, lines 11-14); see also claim 30, lines 13-18 and claim 31, lines 9-12. This allows the exchange of all states to be avoided; thus reducing the amount of data to be exchanged between the two management systems. As a consequence, any prior art reference that does not address issues related to "state realignment" is not particularly relevant to the claims which address the problem of mass data exchange during state realignment and which recite methods and systems that are capable of significantly reducing the amount of data needed to be exchanged during "state realignment."

The October 16, 2009 Office Action attempted to overcome the lack of relevant teaching in Tanaka et al. by citing Carretta et al. which does relate to "state realignment." The individual teachings of Carretta et al. are discussed below. However, it is submitted that the failure of Tanaka et al. to mention "state realignment" makes the combination of Tanaka et al. and Carretta et al. improper. Due to the lack of teachings in Tanaka et al. regarding "state realignment," one of ordinary skill in the art would not look to Carretta et al. for modification of Tanaka et al., or look to Tanaka et al. to expand on the teachings of Carretta et al. with respect to "state realignment." The reason given for modifying Tanaka et al. to incorporate the features of Carretta et al., for "economizing the state information to be sent to a MANAGER so that the latter can recover its own alignment and the economy is very advantageous when the state of the managed subsystem is defined by a large number of variables" Office Action, page 5, lines 10-13, is a common benefit of the claimed invention and Carretta et al., but does not contain any reason why one of ordinary skill in the art would look to Carretta et al. to modify Tanaka et al. since Tanaka et al. is not related to state realignment and there is no value in economizing state information in the system disclosed by Tanaka et al. As discussed above, the Examiner has failed to provide any reason why one of ordinary skill in the art would consider Tanaka et al. when faced with any issue related to "state realignment," including reducing the amount of data transmitted during "state realignment." In other words, the relevance of Carretta et al. does not make Tanaka et al. relevant.

As for the teachings of Carretta et al. regarding "state realignment:" (a) page 6, lines 2-5; (b) page 8, line 36 to page 9, line 3; (c) page 11, lines 1-23; (d) page 12, lines 10-13; (e) page 36, line 28 to page 37, line 36; and (f) page 38, line 32 to page 39, line 6, sections (a) and (b) merely describe "state realignment" in general; section (c) provides a high-level description of "state realignment" in the system disclosed in Carretta et al., followed by an overview of the alternatives of "send[ing] only those state variable values different from the respective default

values" and "send[ing] all the state variable values"; section (d) describes the timing of state realignment which is described as an "innovation introduced" by Carretta et al.; and section (f) notes that the managed subsystem must inform the manager when transmission of state variable values starts and ends. As for section (e), it is the longest cited portion of Carretta et al. that is relevant to "state realignment" and is a description of Fig. 11 which "shows the flow chart of the ALIGNMENT RECOVERY module" which provides details of the first alternative method of communicating state variable values summarized in section (c).

As apparently recognized by the Examiner in not rejecting the claims over Carretta et al. alone, Carretta et al. taken alone does not teach or suggest the claimed invention and as discussed above, the Examiner has failed to provide sufficient reasons under *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007) and *Ex parte Smith*, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007) for why one of ordinary skill in the art would have found it obvious at the time the invention was made to modify Tanaka et al. to add "state realignment" by "send[ing] only those state variable values different from the respective default values" as taught by Carretta et al. to meet the requirements that

- (1) each of the claimed elements is found within the scope and content of the prior art; (2) one of ordinary skill in the art could have combined the elements as claimed by methods known at the time the invention was made; and (3) one of ordinary skill in the art would have recognized at the time the invention was made that the capabilities or functions of the combination were predictable.

83 USPQ2d 1516-1517. For the above reasons, it is submitted that claims 17 and 30-33 patentably distinguish over Tanaka et al. and Carretta et al.

As noted above, Meandzija was added to Tanaka et al. and Carretta et al. in rejecting claims 2-16, 18-29 and 34. As discussed in the Amendment filed April 13, 2009 and the Supplemental Amendment filed July 13, 2009, it is submitted that Meandzija does not overcome the deficiencies of Tanaka et al., even with the substitution of Carretta et al. for U.S. Patent 6,182,157 to Schlener et al.

### **Summary of Arguments**

For the reasons set forth above, it is submitted that claims 2-34 patentably distinguish over Tanaka et al., Carretta et al. and Meandzija, taken individually or in combination. Thus, it is respectfully submitted that the Examiner's final rejection of the claims is without support and, therefore, erroneous. Accordingly, the Board of Patent Appeals and Interferences is respectfully urged to so find and to reverse the Examiner's final rejection.



Please charge the required fee of \$510 to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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## **VIII. Claims Appendix**

2. The method as claimed in claim 30, further comprising the step of utilizing state attributes selected from the group consisting of an operational state, an administrative state, and a usage state as state information.

3. The method as claimed in claim 2, further comprising the step of defining said normal state by predetermined values for said state attributes selected from the group consisting of said operational state, said administrative state, and said usage state.

4. The method as claimed in claim 30, further comprising the step of utilizing state attributes for characterizing an operational readiness, manageability and use of a resource supported by said agent in said communication system as state information.

5. The method as claimed in claim 30, further comprising the step of utilizing status attributes, which specify for a resource supported by said agent in said communication system whether it is in an unknown state, in an alarmed state or in a state availability, as state information.

6. The method as claimed in claim 30, further comprising the step of:  
sending, by said manager in said request message, a correlation information item for a correlation of said respective request with messages containing changed state information received by said agent.

7. The method as claimed in claim 30, further comprising the step of:  
sending, by said agent in a message for starting said state realignment, a correlation information item for correlating the messages containing changed state information subsequently sent with said state realignment started in each case.

8. The method as claimed in claim 7, further comprising the step of sending said correlation information generated by said agent in said message or messages containing said changed state information.

9. The method as claimed in claim 30, further comprising the steps of:

sending, by said manager, a parameter to said agent; and  
controlling, by said manager, said state realignment in dependence on said parameter.

10. The method as claimed in claim 30, further comprising the steps of:  
sending, by said manager, a parameter;  
automatically initiating said state realignment by said agent, utilizing said parameter.

11. The method as claimed in claim 10, further comprising the step of providing a parameter by said manager with a parameter value which specifies a starting time for said automatic state realignment.

12. The method as claimed in claim 10, further comprising the step of providing a parameter by said manager with a parameter value which specifies an end time for said automatic state realignment.

13. The method as claimed in claim 10, further comprising the step of providing a parameter by said manager, a parameter with a parameter value which specifies a time interval for a repetition of said automatic state realignment.

14. The method as claimed in claim 9, further comprising the step of providing, by said manager, a parameter with a parameter value which characterizes resources for which changed state information must be transmitted by said agent.

15. The method as claimed in claim 9, further comprising the step of providing, by said manager, a parameter with a parameter value that permits interruption of a running state realignment.

16. The method as claimed in claim 9, further comprising the step of sending, by said manager, said parameter to said agent in said request message.

17. A communication system for state realignment of state information in a management network having a number of management levels, comprising:

an agent at a first management level storing state information together with managed objects associated with the first management level, the state information defining a state of

network resources associated with the managed objects stored in the agent, where each item of state information, for which state realignment shall be performed, can assume at least two values; and

a manager, at a second management level above the first management level, sending a request message for performing state realignment to said agent after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed, said agent checking the state information of said agent with regard to deviations from a normal state defined by one of a predefined value and a combination of predefined values, and sending only deviant state information of said agent indicating the deviations from the normal state of the state information to said manager in response to the request message.

18. The communication system as claimed in claim 17, wherein state attributes are provided selected from the group consisting of an operational state, an administrative state, and a usage state as state information.

19. The communication system as claimed in claim 18, in which the normal state is defined by values for said state attributes selected from the group consisting of an operational state, an administrative state, a usage state, an unknown state, an alarm status, and an available status.

20. The communication system as claimed in claim 17, wherein state attributes are provided for characterizing an operational readiness, a manageability and a use of a resource supported by said agent in said communication system as state information.

21. The communication system as claimed in claim 17, wherein status attributes, which specify for a resource supported by said agent in said communication system whether it is in an unknown state, in an alarm state or in a state of availability, are provided as state information.

22. The communication system as claimed in claim 17, wherein said state realignment can be controlled by said facilities in said manager in dependence on at least one parameter sent to said agent.

23. The communication system as claimed in claim 17, wherein said facilities in said manager send a parameter permitting said state realignment to be automatically initiated by said agent.

24. The method as claimed in claim 30, further comprising the step of utilizing state attributes selected from the group consisting of an unknown state, an alarm status, and an available status as state information.

25. The method as claimed in claim 24, further comprising the step of defining said normal state by predeterminable values for said state attributes selected from the group consisting of said unknown state, said alarm status, and said available status.

26. The method as claimed in claim 10, further comprising the step of providing, by said manager, a parameter with a parameter value which characterizes resources for which changed state information must be transmitted by said agent.

27. The method as claimed in claim 10, further comprising the step of providing, by said manager, a parameter with a parameter value that permits interruption of a running state realignment.

28. The method as claimed in claim 10, further comprising the step of sending, by said manager, said parameter to said agent in said request message.

29. The communication system as claimed in claim 17, wherein state attributes are provided selected from the group consisting of an unknown state, an alarm status, and an available status as state information.

30. A method for state realignment of state information in a communication system by way of a management network having a number of management levels, comprising:

storing, at an agent of a first management level together with managed objects, state information which defines a state of network resources associated with the managed objects stored in the agent, where each item of state information, for which state realignment shall be performed, can assume at least two values;

defining a normal state of the state information by one of a predefined value and a combination of predefined values;

sending, to the agent from a manager at a second management level above the first management level, a request message for performing the state realignment after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed;

comparing by the agent, the state information stored by the agent for deviation from a normal state of the state information; and

sending, by the agent to the manager in response to the request message, only deviant state information indicating deviation from the normal state of the state information previously stored by the agent and not sending state information which does not deviate from the normal state of the state information.

31. A communication system undergoing state realignment, comprising:

an agent of a first management level that stores state information which defines a state of network resources associated with managed objects stored in the agent, where each item of state information, for which state realignment shall be performed, can assume at least two values; and

a manager at a second management level that sends a request message for performing state realignment to the agent after communication between said manager and said agent is established initially or following a period during which communication was not guaranteed; wherein the agent compares the state information stored by the agent for deviation from a normal state, defined by one of a predefined value and a combination of predefined values, and sends deviant state information of the agent indicating the deviations from the normal state of the state information to the manager only in response to the request.

32. The communication system as recited in claim 17, wherein the state information is a state of a resource.

33. The communication system as recited in claim 32, wherein the state includes representation of at least one of operational readiness, manageability, and use of the resource in the communication system.

34. The communication system as recited in claim 33, wherein the state is defined by a telecommunications industry standard.

**IX. Evidence Appendix**

(None)



**X. Related Proceedings Appendix**

(None)